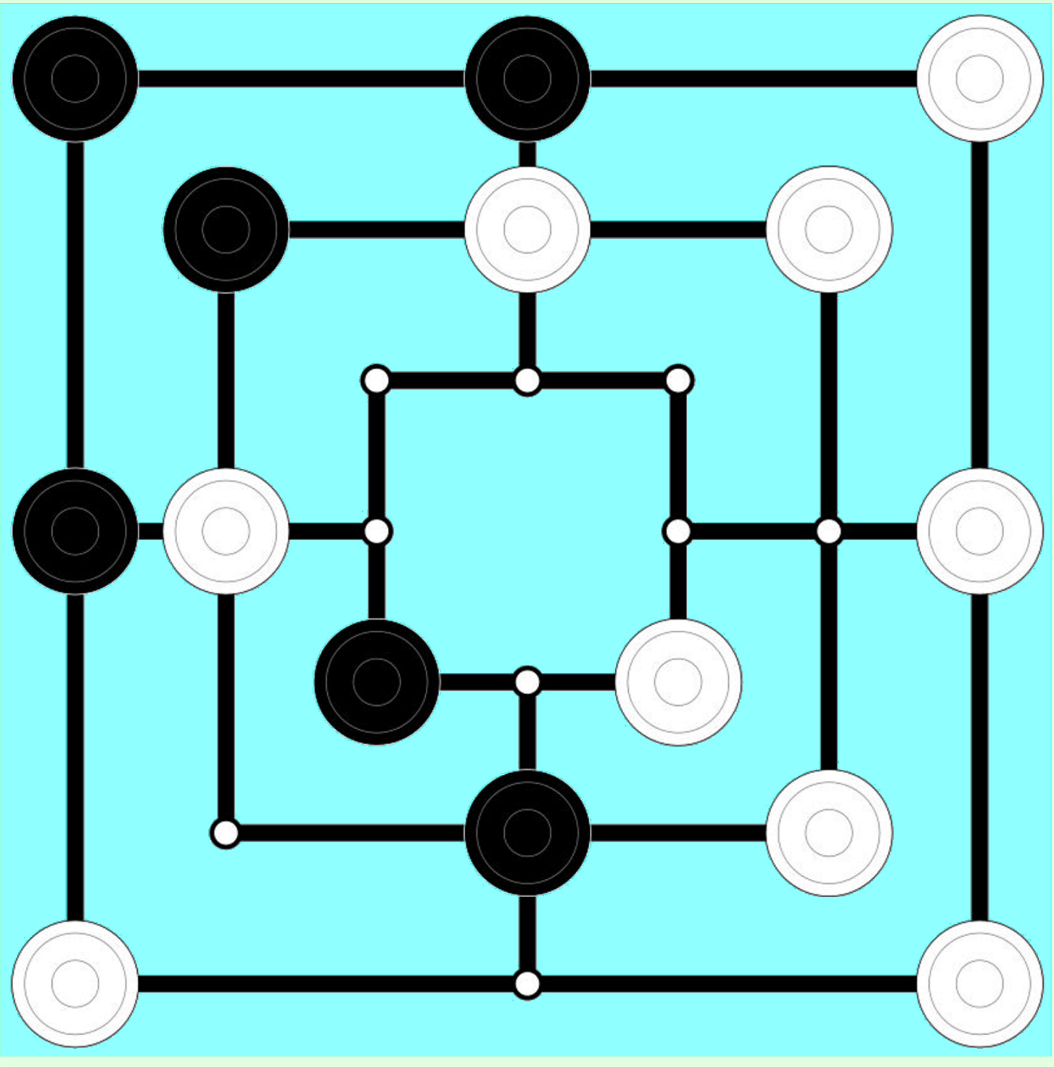
Nine Men's Morris

Book of Board Game Strategy



Dr. John S. Mamoun

Nine Men's Morris

Book of Board Game Strategy

For the Game Known as Mills, Merels, Mühle, Malom or Cowboy Checkers

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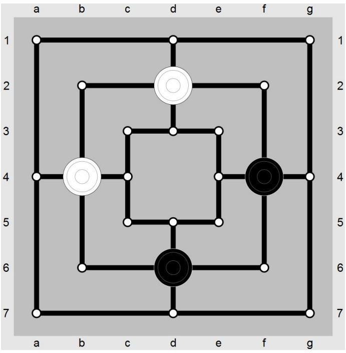
Strategy in Nine Men's Morris

It is difficult to explain an optimal strategy for playing Nine Men's Morris, since any "rule" or "generalization" for playing the game optimally will have exceptions. Any position point that is occupied in the game can be useless or deadly, depending on the overall game position.

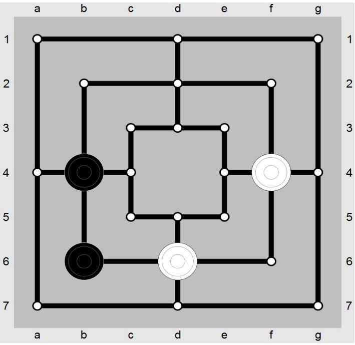
In the opening game, expert human and computer players tend to start by occupying the 4-way intersection points of B4, D2, F4 and D6. These four points give checkers on these points maximum mobility, since there are four empty position points around each of the B4, D2, F4 and D6 points. These points can be used to form various offensive structures, and give access to relatively large parts of the Nine Men's Morris board for positional control:

The Nine Men's Morris computer player for the popular 3-Dimensional computer game Assassin's Creed III would start each game trying to occupy the 4-way intersection points, so clearly this was an expert-level player. Not surprisingly, many players of this computer game complained in internet chat forums about how difficult or unbeatable was this Nine Men's Morris computer player.

Players can start by simply alternating in occupying a 4-way intersection point, so that by the fourth turn, each player occupies exactly two of the 4-way intersection points:

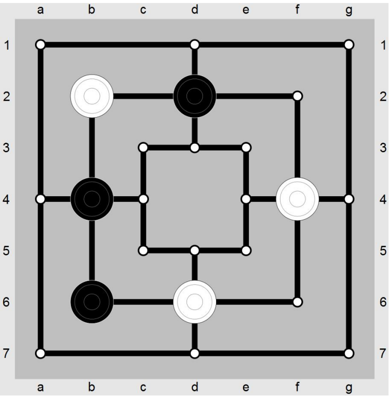


An alternative opening sequence occurs if one player occupies a 4-way intersection point, and then, instead of immediately occupying a second 4-way intersection point, forms a double-checker with the previous 4-way intersection point:



This forces the opponent to use up a

checker to put down a checker to block the player from forming a mill, after which the player on the next turn occupies a second 4-way intersection point. This variation also results in each player having two 4-way intersection points, and an opening game position that will result in a draw with optimal play:

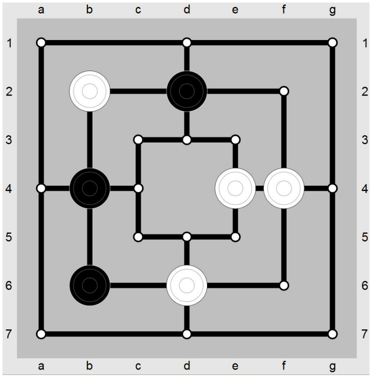


Given that Nine Men's Morris is proven by mathematical and computer analysis to be a draw with optimal play, there is no advantage to being the first player to move. This is due to several basic reasons. The second player to move has an advantage because the second player to move can put down the final checker of the opening game. This gives the second player a "final say" about the position of the game just before the start of the sliding-checkers phase of the game. The advantage of this "final say" reduces the first player's advantage from moving first.

Also, the game can be forced to a draw even if one player is one or two checkers behind the other. This is because often, in the endgame, one player with a numerical superiority of checker simply cannot force a flying opponent to lose, or does not have enough checkers to completely trap the other player. The loss of a checker due to some kind of disadvantage from being second to play in the opening game can be made up for later by the player moving second to be able to force the game to a draw. As a mathematical rule, the second player to move can always force the opening game into a position that will result in a draw with optimal play.

One basic tactic in the opening game is to prevent the opponent from forming pairs of checkers, to prevent the opponent from beginning to be able to form a mill. Another tactic is to position checkers at strategic points such that the opponent will not later be able to shift checkers to form mills.

During the opening game, players may sometimes form pairs of checkers, which threaten to form mills. A common tactic is to put a checker next to a checker on a 4-way intersection point, to form a pair that threatens forming a mill on the next turn:



The opponent is generally forced to use up a turn to put down a checker to block the opponent from forming a mill. Generally, the opponent must block this mill threat, since the loss of a checker in the opening game is a significant setback. Also, from a cost-benefit standpoint, blocking an opponent mill with one checker is a simple and easy way to prevent the loss of one checker, compared to using three turns to form a mill that results in the gain of one checker. The gains are the "same," i.e. a gain of one checker or the prevention of the loss of one checker, but one gain requires taking one turn and one checker to acquire the gain, versus three turns and three checkers to acquire a gain.

Generally, a player should avoid forming a mill during the opening game. Forming a mill uses up three turns and three checkers to form a line of three checkers in a row. The turns and checkers that are needed to form a mill could be used instead to develop a better position in the game. A mill tends to weaken a player's position, since the mill consists of three checkers that are lined up with no spaces between the checkers, so that the mobility of the checkers is more limited, compared to if the checkers had spaces between them. A player's mill may be blocked in by the opponent, especially if the mill is located on an edge of the board or the edge of a square within the board, and this further limits the player's mobility. The opponent can widely distribute checkers over the board, and develop control over wide areas of territory of the board, while the player is spending time forming a mill. The player may gain a checker if the player forms the mill, but the gain of the checker may be offset completely, if the opponent developed a better board game position, while the player was restricting the mobility of his or her checkers by putting them into mill formations with no spaces between the mill checkers to permit movement.

Generally, a player might be able to grab one opponent checker during the checker-depositing phase of the opening game, and still be able to develop a good overall board position. However, a player who forms two

Example Annotated Games of Nine Men's Morris

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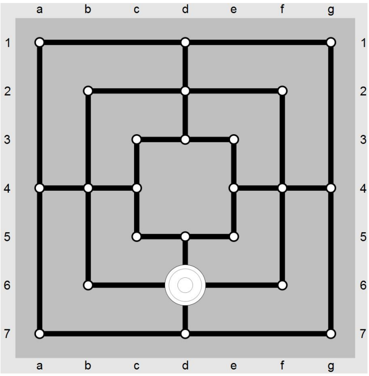
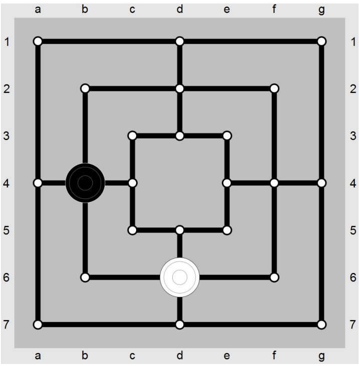
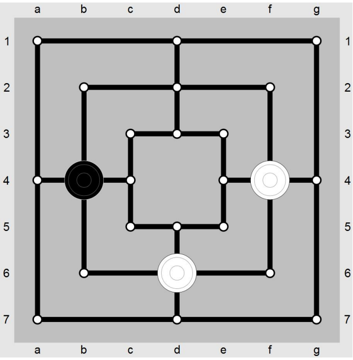
1. Double Adjacent 4-way Intersection Point Opening Game – White Wins



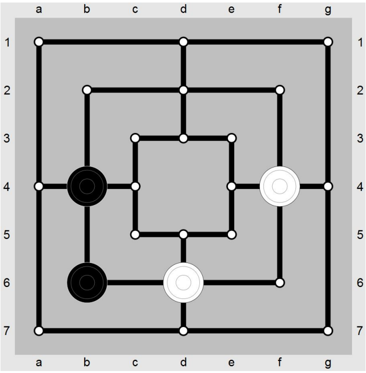
The position points of B4, D2, F4 and D6 are high-mobility points because they are located at intersections with four connecting points. These four points offer higher mobility during the sliding-checkers phase of the game, and provide a variety of combinations for connecting mills or for creating pincer structures that can create mills in more than one different way. The B4, D2, F4 and D6 4-way intersections points are therefore among the more valuable position points in the game. The high value of these points may induce players to start the opening game by trying to occupy as many of these points as is possible. This can lead to a double adjacent sides 4-way intersection opening game, where each player occupies two of these points during the first two turns of the game, and where the players' two 4-way intersection points are adjacent to one another. The first player to move forms the first adjacent pair of 4-way checkers, which gives the first player the ability to threaten forming a pincer structure with these adjacent checkers. After white takes one of the 4-way intersections points at D6, black takes another of the 4-way points by putting a checker on B4:



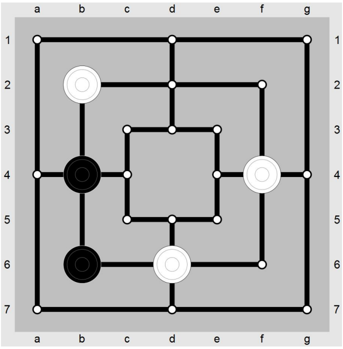
Now, white takes another 4-way intersection points by placing a checker on F4, so that white's two 4-way intersection points are adjacent to one another:



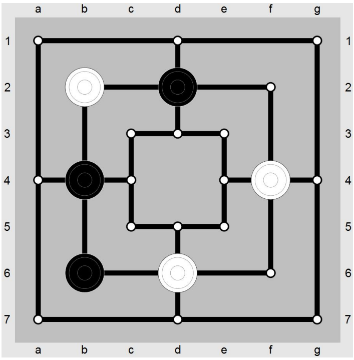
One might expect black to continue the pattern by placing a black checker on the D2 point. However, black instead puts a checker on B6, which threatens to make the B2,B4,B6 mill:



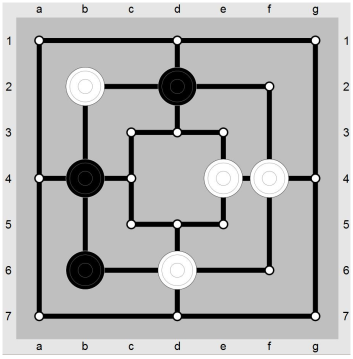
White is now forced to play B2, to block black's formation of the B2,B4,B6 mill. By forcing white to play B2, black also forces white to not occupy a third 4-way intersection point at D2, and forces white to put a checker on B2, which is a low-mobility point with only two other connecting points, one of which is blocked by black at B4:



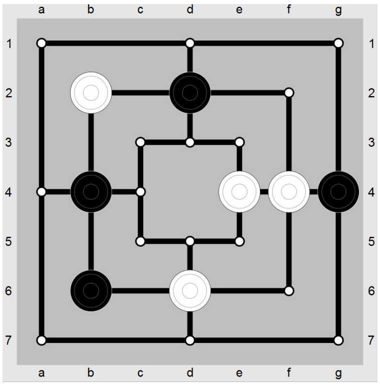
Now, black takes the fourth, and the last remaining, 4-way intersection point on the board, at D2. At the end of this double adjacent 4-way intersection opening game sequence, each player has two of these valuable points:



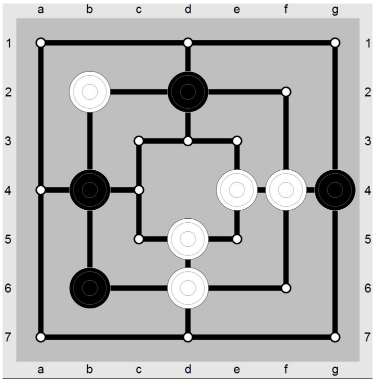
At this stage of the game, white decides to coerce black. White deposits a checker on E4, which threatens the formation of a white mill at E4,F4,G4:



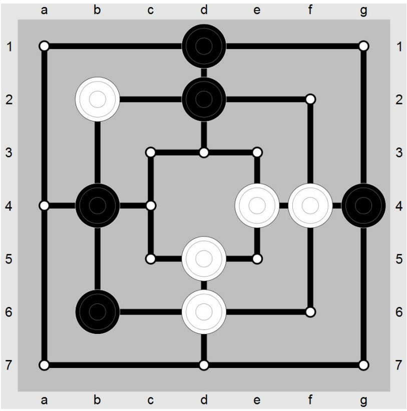
Black is forced to put a checker on G4. The G4 position point is not bad, since the G4 point has two empty points next to it, so that the G4 point gives black some mobility. However, black's G4 checker is isolated, and cannot at this time threaten formation of a mill. By forcing black to play at G4, white forces black to divide up and spread out black's checkers:



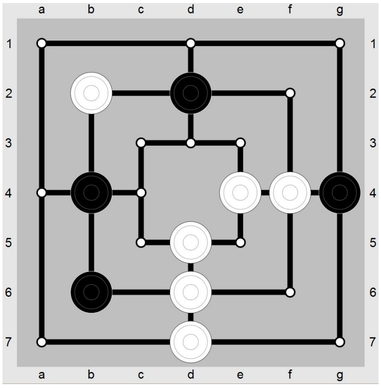
White continues with another coercive play, by putting a checker on D5. The white D5 checker threatens the formation of a mill at D5,D6,D7. In addition, white threatens to form a pincer structure at D5,E5,E4, which would create two simultaneous ways for white to form a mill:



Black responds by placing a checker on D1, which threatens to form a mill at D1,D2,D3 and also threatens to create a pincer structure at D1,G1,G4:



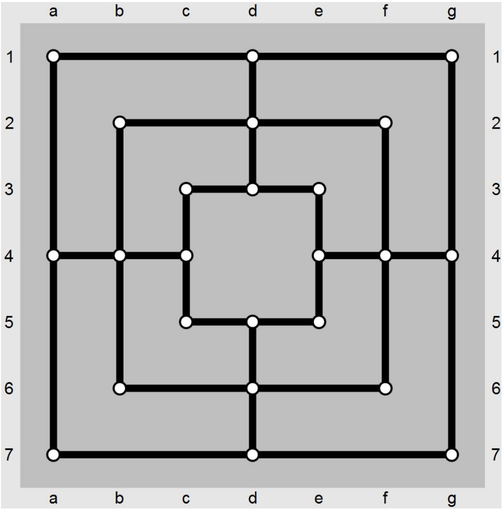
Black's D1 play was a blunder, however. It is generally best in the opening game to block an opponent from immediately forming a mill, due to the high costs of losing checkers in the opening game. White's next play is to put a checker on D7 to complete the D5,D6,D7 mill, and then capture black's checker on D1:



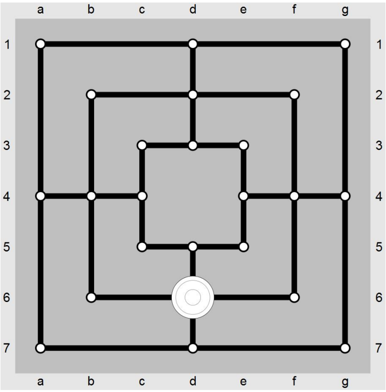
Black responds by replacing the D1 checker, and has lost both a checker and a tempo in the past turn:

Appendix: Rules of Nine Men's Morris

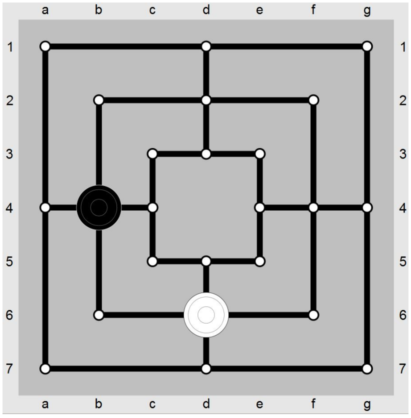
Nine Men's Morris is played on a board consisting of three concentric squares. The squares are connected with horizontal and vertical lines such as to form 24 position points at the board intersections:



For purposes of this book, the position points are labeled with an algebreic notation with a letter for the vertical column of the position point and a number for the horizontal row of the position point. For example, this diagrams shows a checker located at the D6 position point:



There are two players, black and white, who play one turn after the other. Each player starts out the game with nine checkers. At the start of the game, players put down one checker per turn on a position point on the board. Only one checker can occupy a position point on the board at any one time. For example, in this diagram, white went first and put down a checker on position point D6, and then black deposited a checker on position point B4:



Appendix: History of Nine Men's Morris

Nine men's morris is an ancient board game, which has been played for at least 2,000 years. No one knows who invented it or if it evolved from a previous game. It may have originated in North Africa over 2,000 years ago, after which it might have been sent by North African Moors to southern Europe. The distinctive grid pattern of the game board has been found carved into many stone and wood structures throughout ancient Rome, ancient Byzantium and Medieval Europe. Since nothing in the ancient or modern world looks like a nine men's morris gameboard except for an actual nine men's morris gameboard, it is presumed that anything carved into ancient stone or wood that looks like a nine men's morris gameboard has to be a nine men's morris gameboard, and not something exotic like a special worshipping diagram for the gods. This is how it is possible to prove archaeologically that Nine Men's Morris is an ancient game; if it looks like nine men's morris, it actually is, and if it is carved into something ancient, this means that the game itself is ancient.

The game of nine men's morris was popular enough, over many generations, such that its rules were able to continuously exist as an oral tradition. This may be partly because the game board and pieces could be quickly and easily improvised using stones and pebbles, and by carving a board game in stone or mud. The game board was often found, no doubt, carved into stone or dirt out of doors, where it would be exposed to the elements. This may explain William Shakespeare's somewhat weird line, in his play "A Midsummer Night's Dream," where the character Titania talks about how, due to inclement weather, "the nine men's morris is filled up with mud." This line apparently alludes to a nine men's morris game that was carved into stone, such that the position points of the game filled up with mud during a rainstorm. This line may also be the first written example of the game name of "nine men's morris."

In 1283, the book "Libro de los Juegos," or Book of Games, was published in the form of a hand-written, hand-colored edition on 97 leaves of parchment. This book was commissioned, rationally and constructively, by King Alfonso the Tenth of Spain, and written in his scriptorium in Toledo, prior to the age of the printing press. This publication documented, apparently for the first time in

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